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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/751,000	12/29/2000	Sadao Hirae	P/1596-51	9450
2352 7590 01/11/2005				
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			EXAMINER	
			KORNAKOV, MICHAIL	
ART UNIT		PAPER NUMBER		
1746				

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/751,000	Applicant(s) HIRAE ET AL.	
	Examiner Michael Kornakov	Art Unit 1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-12, 25-28 and 33-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-12, 25-28 and 33-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/01/2004 has been entered.
2. Claims 9-12, 25-28, and 33-37 are pending.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 9-12, 25-28 are rejected under 35 U.S.C. §101 because these claims are directed to neither a "process" nor a "machine," but rather embraces or overlaps two different statutory classes of invention set forth in 35 U.S.C. §101, which is drafted so as to set forth the statutory classes of invention in the alternative only.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

5. Claims 9-12 and 25-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A single claim that claims both an apparatus and the method steps of using it, is indefinite under 35 U.S.C. 112, second paragraph. See *Ex Parte Lyell*, 17 USPQ 2d 1548 (Bd. Pat. App. 7 Inter.1990).

These claims are also rejected under 35 USC 101, because the claim embraces or overlaps two different statutory invention.

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 33-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 5,078,832 to Tanaka, in view of United States Patent No. 5, 843, 527 to Sanada et al.

Tanaka discloses a wafer treating apparatus (see e.g. patented claim 1), a support rotatable by a motor for supporting and spinning a substrate (see element 62 'M' in Fig. 3 and relevant associated text). Tanaka additionally teaches a cleaning solution supply having a **nozzle capable of performing in the manner claimed** (element 59 of figure 3 and relevant associated text). The recited future intended use of "for supplying a cleaning solution" lacks the positive recitation required for the element

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to be given patentable weight. Tanaka further discloses a UV emitter positioned above said support (see element 36 of figure 3 and relevant associated text). It is noted that the wafer traverses from area 36 to area 38, however the claim does not require the ability to simultaneously emit UV light and apply solution. This limitation is not read into the claim.

Each and every limitation of claims 33-37 is identically disclosed in Tanaka, as set forth above, except Tanaka fails to explicitly disclose the controller.

Sanada teaches that it is well known and conventional to use a controller to automate processes (column 7, lines 33-35 et seq.). Sanada provides the motivation for utilizing controller, i.e such modification facilitates the effective coating the entire surface of the substrate with liquid. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add the controller, as taught by Sanada in the apparatus taught by Tanaka, in an effort to reduce production costs while optimizing the contact of the substrate with cleaning solutions, thus improving effectiveness and reproducibility.

8. Claims 9-12, and 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita in view of Sanada and further in view of Tanaka.

Claims 9-12 and 25-28 recite a substrate treating apparatus. Structurally the same is disclosed in Tomita at column 1, line 61 et seq.

Tomita teaches a spin washing step via a spin. Tomita does not explicitly teach the controller. Sanada teaches that it is known and conventional to use a controller to

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automate processes (column 7, line 33 et seq.) in order to improve the coating of the wafer surface with liquid, thus providing a motivation to add the controller into other apparatus, where such feature is essential. It would have been obvious to one having ordinary skill in the art at the time the invention was made to add the controller, as taught by Sanada, because such modification facilitates the effective contact of the entire surface of the substrate with liquid, and thus improves effectiveness and reproducibility of the apparatus of Tomita.

Thus, each and every limitation of claims 9-12, 25-28, is identically disclosed in the combination of Tomita and Sanada, as set forth above, except the combined references fail to explicitly disclose a UV reflector of claim 25 and the specific wavelength of claim 26. Tanaka discloses the reflector in Figure 3, above the UV lights 48. The claimed reflector is disclosed in the context of a spin washer in Tanaka. The skilled artisan would have been motivated to include a reflector of Tanaka with the UV radiation source of Tomita to maximize the amount of radiation that is directed to the wafer surface. As to the wavelength, Tanaka also discloses a low pressure Hg bulb with a wavelength overlapping the claimed range, namely, Tanaka discloses 184.9-253.7 nm wavelength. Absent a showing of criticality of the disclosed wavelength is considered to read on the claimed wavelength.

9. Claims 9-12, 25-28, and 33-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 4,161,356 to Giffin et al. in view of Sanada and further in view of Tanaka.

Giffin discloses, inter alia in figure 6 and relevant associated text the limitations of the claims, except that Giffin fails to explicitly disclose a reflector, a controller, and the specific wavelengths of UV light, although in the second drawing of FIG. 7, it is seen that radiation in the form of ***ultraviolet light is directed downwardly onto previously unexposed layers of photoresist***, thereby making these regions available for removal by developer.

Tanaka discloses the reflector in Figure 3, above the UV lights 48. The claimed reflector is disclosed in the context of a spin washer in Tanaka. The artisan would have been motivated to include a reflector to maximize the amount of radiation that is directed to the wafer surface. Such an improvement allows for optimal delivery of UV radiation to an intended surface. Tanaka also discloses a low pressure Hg bulb with a wavelength overlapping that claimed, namely Tanaka discloses 184.9-253.7 nm. Absent a showing of criticality of the wavelength, the disclosed wavelength is considered to read on the claimed wavelength.

The combined teaching of Giffin and Tanaka fail to teach a controller. Sanada teaches a controller at column 7, line 33 et seq. and teaches and that it is well-known and conventional to use a controller to automate processes (column 7, line 33 et seq.). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add the controller to the combined structure of Giffin and Tanaka, as taught by Sanada. The modification facilitates the effective contact of the entire surface of the substrate with liquid, see Sanada at Column 7, line 33

et seq. Therefore the skilled artisan would have motivated to make the claimed combination in an effort to reduce production costs while increasing effectiveness of the apparatus and its reproducibility.

Response to Arguments

10. Applicant's arguments filed 10/06/2004 have been fully considered but they are not persuasive.

11. Applicants' argument resides in contention that an important feature of the claimed invention derives from the fact that it emits **ultraviolet light to a cleaning solution having ozone dissolved in the ionized water**, while the prior art references lack such feature. This is not found persuasive for the reason that **none** of the claims currently pending, recite the ultraviolet light emitted ON the cleaning solution. To the contrary claims call for the UV light emitted on the substrate, which is met by the disclosure of all primary references cited in the rejection. It is noted that the features upon which applicant relies (i.e., ultraviolet light emitted ON the cleaning solution) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Therefore, Applicants' arguments are much more specific than the claims. It is further noted that the claims are directed to the apparatus, wherein the patentability is defined by what the apparatus is (i.e. its structural elements), but not what the apparatus does (i.e. its functions).

With regard to Applicants' arguments that in the instant invention the ultraviolet light is emitted to the substrate under atmospheric conditions, it is noted that all the primary references also recite the use of UV irradiation under atmospheric conditions, especially interesting the teaching of Tanaka, wherein the surface of the thin film having formed on the wafer is rendered hydrophilic (in order to remove contaminants or photoresist) by any of the following processing: (1) ultraviolet ray irradiation, (2) supplying of ozone at the same time as ultraviolet ray irradiation is applied. Such treatment, as well as the treatment in Tomita and Giffin is performed under atmospheric conditions.

Therefore, the combination of references is properly applied to reflect all structural limitations of the claimed apparatus, and renders the instant claims unpatentable under 35 U.S.C. 103 (a).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kornakov whose telephone number is (571) 272-1303. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael Kornakov
Primary Examiner
Art Unit 1746

1/7/2005